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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,304	03/15/2001	Richard Joseph Saia	RD-28435	9545

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EXAMINER

NGUYEN, DILINH P

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 08/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/681,304

Applicant(s)

SAIA ET AL.

Examiner

DiLinh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-8, 16 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gorowitz et al. (U.S. Pat. 5,757,072) in view of Noddin (U.S. Pat. 5731047).

Gorowitz et al. disclose the device (cover fig. and figs. 3a-3d, column 8, lines 20 et seq.) comprising:

an adhesive layer 30 to attach a Kapton polyimide film 32 (column 9, lines 18-24) to a dielectric film 28;

providing a cavity 16r having a smooth surface perimeter (column 6, lines 65-66) and extending through the Kapton polyimide film 32 and at least partially through the dielectric layer 28;

removing the film 32 (fig. 3b, column 9, lines 18-24);

attaching the semiconductor chip 12 to the dielectric layer 28 with an air bridge structure 12c being positioned within the cavity. Gorowitz et al. disclose the claimed invention except not specifically pointing out the adhesive layer 30 is a partially-cured adhesive.

Noddin discloses a semiconductor device comprising: using a partially-cured adhesive (column 31, lines 10-15) and it is well known in the art to use the partially-

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cured adhesive to provide the secure bonding for the device. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Gorowitz et al. as shown by Noddin to provide the secure bonding for the device.

- Regarding claims 2 and 16, Gorowitz et al. disclose providing vias through the dielectric layer (figs. 3c-3d) extending to connection pads of the chip 12 and applying a pattern of electrical conductors to the connection pad (cover fig.).
- Regarding claim 3, Gorowitz et al. disclose using the adhesive to attach the Kapton polyimide film 32 to the package, coating the dielectric layer 28 with the adhesive 30.
- Regarding claim 4, Gorowitz et al. disclose attaching the chip comprises using the adhesive (fig. 3c, column 9, lines 25-37).
- Regarding claim 6, it would have been conventional to one having ordinary skill in the art wherein the adhesive comprises a mixture of photodielectric and epoxy materials.

3. Claims 7-8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gorowitz et al. (U.S. Pat. 5,757,072) in view of Noddin (U.S. Pat. 5731047) and further in view of Saia et al. (U. S. Pat. 6150719).

Gorowitz et al. and Noddin disclose the claimed invention except for not providing a protective coating in the cavity, which is the polyimide film and wherein the protective coating comprises a hermetic seal on the polyimide layer.

Saia et al. disclose a semiconductor device comprising:

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a polymer film coating with a DLC (diamond like carbon) composite film (column 2, lines 30-31), wherein the DLC forms a hermetic seal over the polymer film structure (abstract) to protect the polymer film. It would have been obvious to one having ordinary skill in the prior art at the time the invention was made to provide the protective coating in the cavity. For instance, Hays et al. disclose the antireflective coating in the cavity (fig. 5, column 7, lines 56-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Gorowitz et al. with a protective coating for the polymer film, as shown by Saia et al.

Response to Arguments

Applicant's arguments filed 6/11/02 have been fully considered but they are not persuasive.

The applicant argues the office action has provided no supporting reference that the cavity has a smooth surfaced perimeter.

Gorowitz et al. disclose the cavity 16r is a "U shaped" (fig. 2, column 6, lines 65-66). Therefore, Gorowitz et al. disclose the cavity has a smooth surface perimeter.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in

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the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case:

Gorowitz et al. disclose the device (cover fig. and figs. 3a-3d, column 8, lines 20 et seq.) comprising: a cavity 16r having a smooth surface perimeter (column 6, lines 65-66) and extending through the Kapton polyimide film 32 and at least partially through the dielectric layer 28.

a polymer film coating with a DLC (diamond like carbon) composite film (column 2, lines 30-31), wherein the DLC forms a hermetic seal over the polymer film structure (abstract) to protect the polymer film.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cavity of Gorowitz et al. with a protective coating for the polymer film, as shown by Saia et al.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (703) 305-6983. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, OLIK CHAUDHURI can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DLN
August 16, 2002


PHAT X. CAO
PRIMARY EXAMINER